NEC

MODEL CT-6A1P-2B2

COLOUR TELEVISION SERVICE MANUAL

SER. NO. 1070

Better Service
Better Reputation
Better Profit

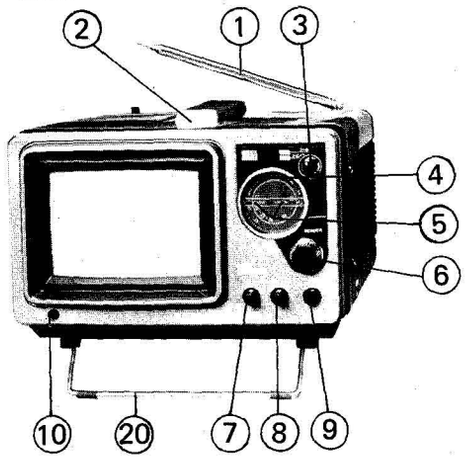


Photo 1.

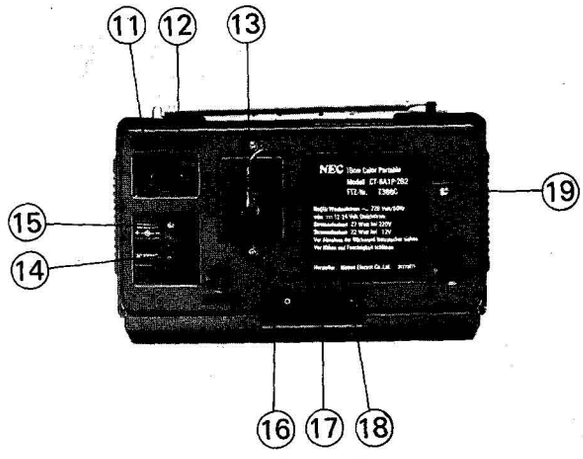


Photo 2.

SPECIFICATIONS

Power Requirement:	AC 220V 50Hz DC 24V
Power Consumption:	AC 27W DC 22W
Antenna Impedance:	75 ohm
Frequency Range:	VHF 2 – 12 UHF 21 – 68
Video IF:	38.9 MHz
Sound IF:	33.4 MHz
Sound Output:	0.8W
Picture Tube:	160AB22(Y)
Integrated Circuits:	6
Transistors:	26
Diodes:	53

LOCATION OF CONTROLES

1. Telescopic Rod Aerial
2. Handle
3. Band Selector Switch
4. Dial
5. Channel Pointer
6. Tuning Knob
7. Contrast Control
8. Volume Control
9. Power Switch
10. Earphone Jack
11. Brightness Control
12. Colour Control
13. Aerial Terminal/75-ohm Aerial Plug
14. AC Receptacle
15. DC Receptacle
16. H. Hold Control
17. V. Hold Control
18. Degaussing Switch
19. Focus Control
20. Stand

Nippon Electric Co.,Ltd.

TOKYO, JAPAN

1. **Back Cover Removal** (See photo 3.)
   a. Remove four screws A.
   b. Remove two screws B securing the antenna terminal.
   c. Draw out the back cover from rear side: the cover will slide out of its position.

2. **Taking the Chassis Out** (See photo 4.)
   a. Remove five screws C.
   b. Pull off volume control knob (8) and contrast control knob (7).
   c. From rear side, draw the chassis out.

3. **Opening Out the Regulator Section** (See photo 4.)
   a. Remove screw (D).
   b. Turn the regulator section around its pivot to expose internals.

4. **DC-PS Board Removal**

   This printed-circuit board comes off when its two securing screws (E) are removed.

5. **Shield Cover Removal for 4A Fuse Replacement or +B2 (22V) Adjustment**

   The cover of the shield case is held in latched condition by two claws. Disengage the claw and take out the cover.

6. **Exposing Transistor (TR656) for Removal**

   Remove two screws (F).

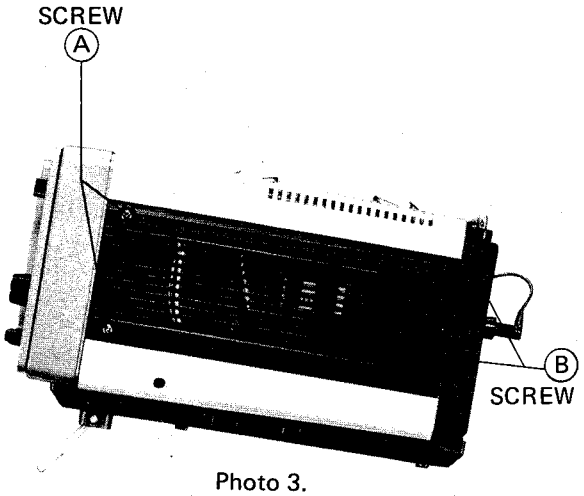


Photo 3.

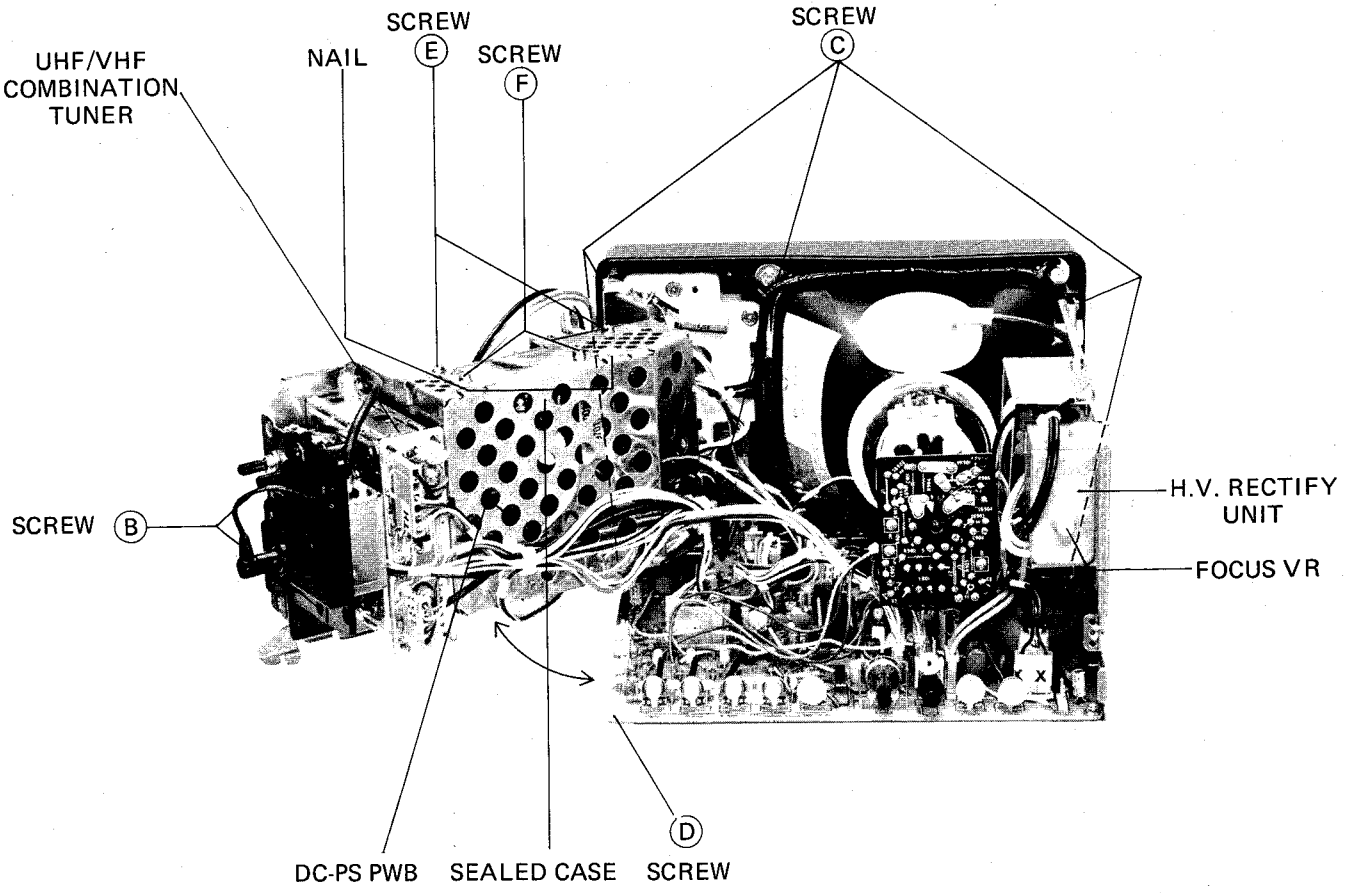


Photo 4.

ALIGNMENT PROCEDURE

1. CHANNEL SETTING

1-1. VL Setting

a. Move U-V selector switch to VHF side.
b. Connect the external signal line.
c. Bring figure "2" (for channel 2, marked on the dial disc) into registor with the channel pointer (at the front panel of the cabinet). This is accomplished by means of the tuning VR. Be sure the point and figure "2" are perfectly aligned.
d. Reposition VR106 (on TUNER PWB) for best reception on channel 2.
e. After securing best tuning on channel 4, similarly match figure 4 to the channel pointer.
f. Reposition VR103 similarly to obtain best reception on channel 4.
g. Turn back the tuning VR to channel 2; and check to be sure that the alignment of channel pointer and figure "2" is not disturbed. If any offset is noted between the two, eliminate it by repeating the above steps (c), (d), (e) and (f).

1-2. VH Setting

a. By means of the tuning VR, bring figure "5" (for channel 5, marked on the dial disc) into perfect register with the channel pointer (at the front).
b. Reposition VR105 (on TUNER PWB) for best reception on channel 5.
c. Similarly match figure "12" to the channel pointer.
d. Reposition VR102 for best reception on channel 12.
e. Turn back to channel 5 and see if there is any offset between the channel pointer and figure 5; if so, repeat the above steps (a), (b), (c) and (d) to eleminate the offset.

1-3. UHF Setting

a. Move U-V selector switch to UHF side.
b. Connect the UHF signal line.
c. Using the tuning VR, match the channel number mark (on the dial disc) accurately to the channel pointer. (This applies to each UHF station that can be received.)
d. Adjust VR101 for best reception.

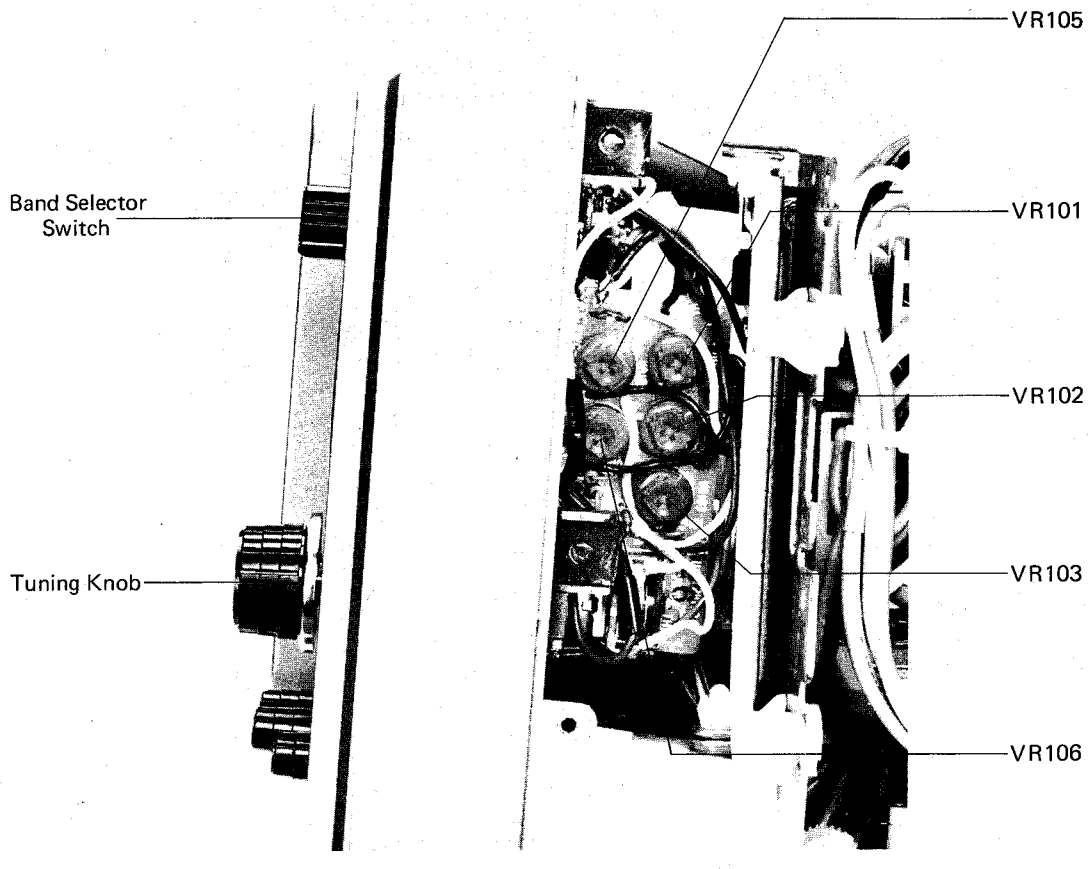


Photo 5.

2. POWER SUPPLY ADJUSTMENT

a. Ensure mains input voltage is 220V (AC).
b. Set the Brightness and Contrast controls to maximum.
c. Adjust VR651 for 22V (DC) at J2 teminal.
d. Vary the Brightness and Contrast controls and ensure the voltage remains stable.

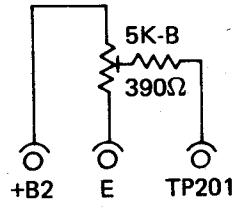


Fig. 1

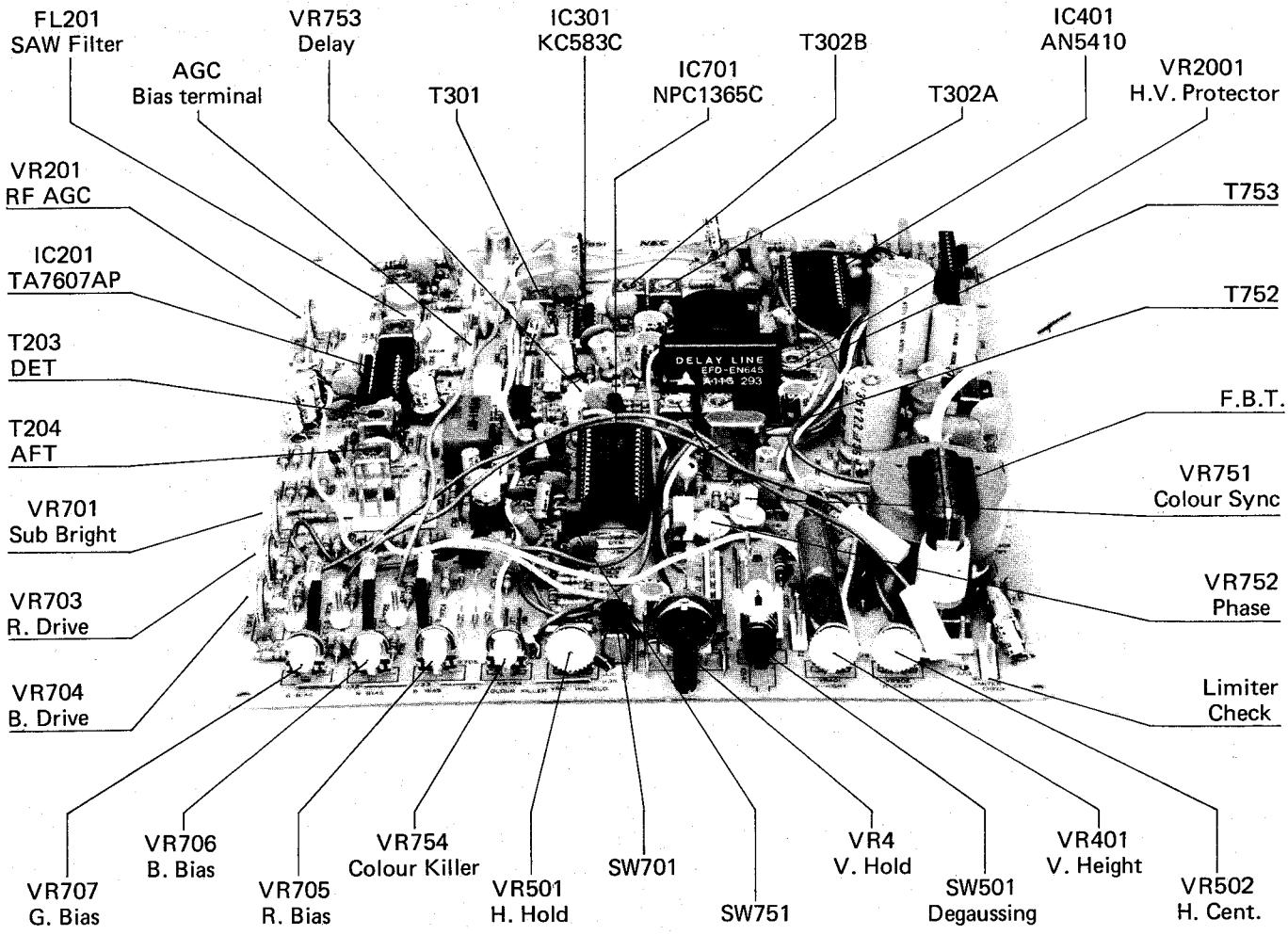


Photo 6.

3. VIF AMPLIFIER SECTION

3-1. Final Stage

a. Connect 38.9MHz carrier oscillator to VIF input terminal (on PWC-785).
b. Connect bias control potentiometer (AGC-bias variable resistor) to AGC bias terminal, as shown in **Fig. 1.**
c. Connect a 15V DC VTVM (vacuum-tube voltmeter) to TP205.
d. From its VIF cutoff position (the end of clockwise turning), slowly turn AGC-bias VR anti-clockwise until the voltmeter indicates about 8.0 volts. Under this condition, turn T203 to maximize the voltmeter indication.
e. Turn the same VR to its VIF cutoff position, and then turn it back slowly to be sure that the indication changes first from about 6.5 volts to about 10 volts and next to about 8.5 volts at the end of anti-clockwise turning.

NOTE:

In step (d), above, if anti-clockwise turning of AGC-bias VR fails to raise the voltmeter indication to 8.0 volts, set the VR at its VIF full-gain position (the end of anticlockwise turning) and adjust the core of T203 to maximize voltmeter deflection.

3-2. AFT Adjustment

a. Set up the conditions stated in (a) and (b), 3-1 Final Stage.
b. Connect the VTVM to TP204.
c. Turn AGC-bias VR all the way clockwise (to VIF cutoff position) and read the VTVM indication.
d. Turn back the VR to the other end (to VIF full-gain position). Slowly rotate the core of T204 anti-clockwise turning.
e. As the core is so rotated, the VTVM's indicating hand will deflect more and more to show the maximum value (about 10V DC and then rapidly deflect back to the minimum (about 2.5V).
f. In that range of core rotation in which the rapid change occurs, locate the core position at which the VTVM reading taken in step (c) above. Set the core in that position.
g. Rotate the AGC-bias VR lock to lock and take a reading at each lock, in order to be sure that the two VTVM readings (one at full-gain and one at cutoff position) and equal within ±0.3 volt.
h. If the difference between the two exceeds the limit (±0.3 volt), repeat step (f).

3-3. RF AGC Adjustment

a. Recieve standard colour bar signal of 65dB.
b. Tun the Tuning knob to obtain the best point.
c. Connect a voltmeter of 15V (DC) between A2 and earth.
d. Rotate from the higher direction to lower one of the indication of the voltmeter with RF AGC control (VR201), adjust it for 7.0V.
e. Increasing input by 4dB, confirm that pointer of the voltmeter indicates toward the lower side by 0.8V or more.
f. If there should be maked colour beating, turn VR201 and readjust it.

4. SOUND SECTION

a. Make testing connections as shown in **Fig. 2.**
b. Set the sound signal generator (SSG) for 50 dB output in 30%-modulated (15-kHz deviation) 400-Hz FM signal.
c. Adjust T301, T302A and T302B to maximize the sinusoidal waveform displayed by the oscilloscope.
d. Switch the SSG to AM of 30% modulation, and adjust T302B to minimize the displayed waveform.
e. Switch back the SSG to 30% FM and check to be sure that the displayed waveform in not markedly different form what it was in step (c), above.
f. Increase the SSG output to at least 60 dB, and be sure that no appreciable change occurs in the displayed sine waves.

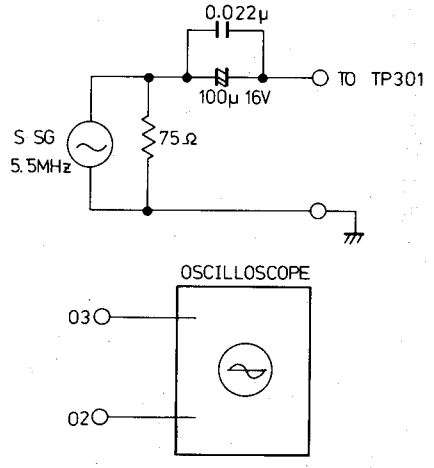
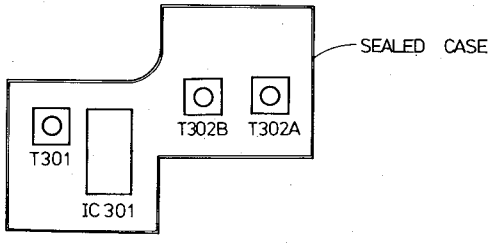


Fig. 2



SIF TOP VIEW

Fig. 3

5. VIDEO SECTION

5-1. Sub-Brightness Adjustment

a. Turn fine tuning to obtain the best point then receive gray scale signal.
b. Set Brightness, Contrast and Colour control to position "Maximum".
c. Connect the ammeter of 3mA DC range with limiter current check terminal.
d. Adjust limiter current to 0.3mA with Sub-Brightness control (VR701).

5-2. White Balance Adjustment

a. After adjustment shown in item 5-1, (d). Set Contrast "MAX" and R-Drive (VR703) B-Drive (VR704) to mechanical centre.
b. Set bias pots (VR705, VR706, VR707) to mechanical centre.
c. Set the service switch (SW701) to "SERVICE".
d. Advance the C.R.T. screen pot (VR901) to provide a horizontal trace of the colour that appears first.
e. Blank out the trace that appeared with the appropriate bias pot (VR705, VR706, VR707).
f. Advance the C.R.T. screen pot (VR901) further to illuminate the next colour, again blank out with the appropriate bias pot.
g. Adjust VR901 to just illuminate the last colour (see note below.
h. Re-adjust the former two bias pots (VR705, VR706 or VR707) to obtain a white trace.
i. Re-set the service switch and on a grey scale pattern check the tracking by varying the brightness and contrast controls.
If necessary adjust the R and B drive controls (VR703 and VR704) for highlight correction.

NOTE:
On some recievers it may not be possible to obtain a colour trace in step (g). Should this be the case set the appropriate bias por (VR705, VR706, VR707) to 45° to the right of the mechanical centre and proceed with steps (f) through (h). The best tracking will be obtained at the lowest brightness level of the trace.

5-3. Confirmation of Brightness Limiter

After adjustment confirm that the indicated value of the ammeter is 0.3mA.

6. CHROMA SECTION ADJUSTMENT

6-1. Colour Synchronization

a. Feed Standard Colour bar signal.
b. Set SW-751 to "ALIGN" position and adjust APC control (VR751) for locked colour.
c. Set SW-751 to "NORMAL" position and check that colour synchronization is working normally.

6-2. PAL Decorder Adjustment

a. Feed "DEM" signal from Philip's Pattern Generator PM.5509.
b. Set colour VR(VR6) to MAX.-position.
c. Connect the probe of oscilloscope to R output using the pad shown in **Fig. 4.**
d. Adjust T752 and T753 to equalize the first bars of each line in bar height.

NOTE:
Be sure that, when making this adjustment, the cores of T752 and T753 are displaced as equally as possible.

e. By adjusting VR753 (DELAY), equalize the height of third bar to that of second bar.
f. By adjusting VR752 (PHASE), bring the fourth bar to the level of second bar.
g. Repeat steps (d), (e) and (f), above, to line up the 2nd, 3rd and 4th bars straight.

6-3. Colour Killer Adjustment

a. Feed B/W signal to the set.
b. Using the fine tuning knob, tune the set, positioning the knob on the slightly higher side.
c. Turn the colour killer resistor (VR754) slowly until colour noise disappear, and set this VR right there.
d. Turn back the fine tuning knob to the exactly tuned position to be sure that this turning back does not bring out colour noise in the picture. Check to be sure, also, that, when colour signal is received, a colour picture shows up.

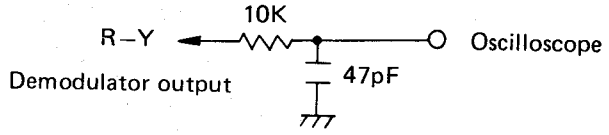


Fig. 4

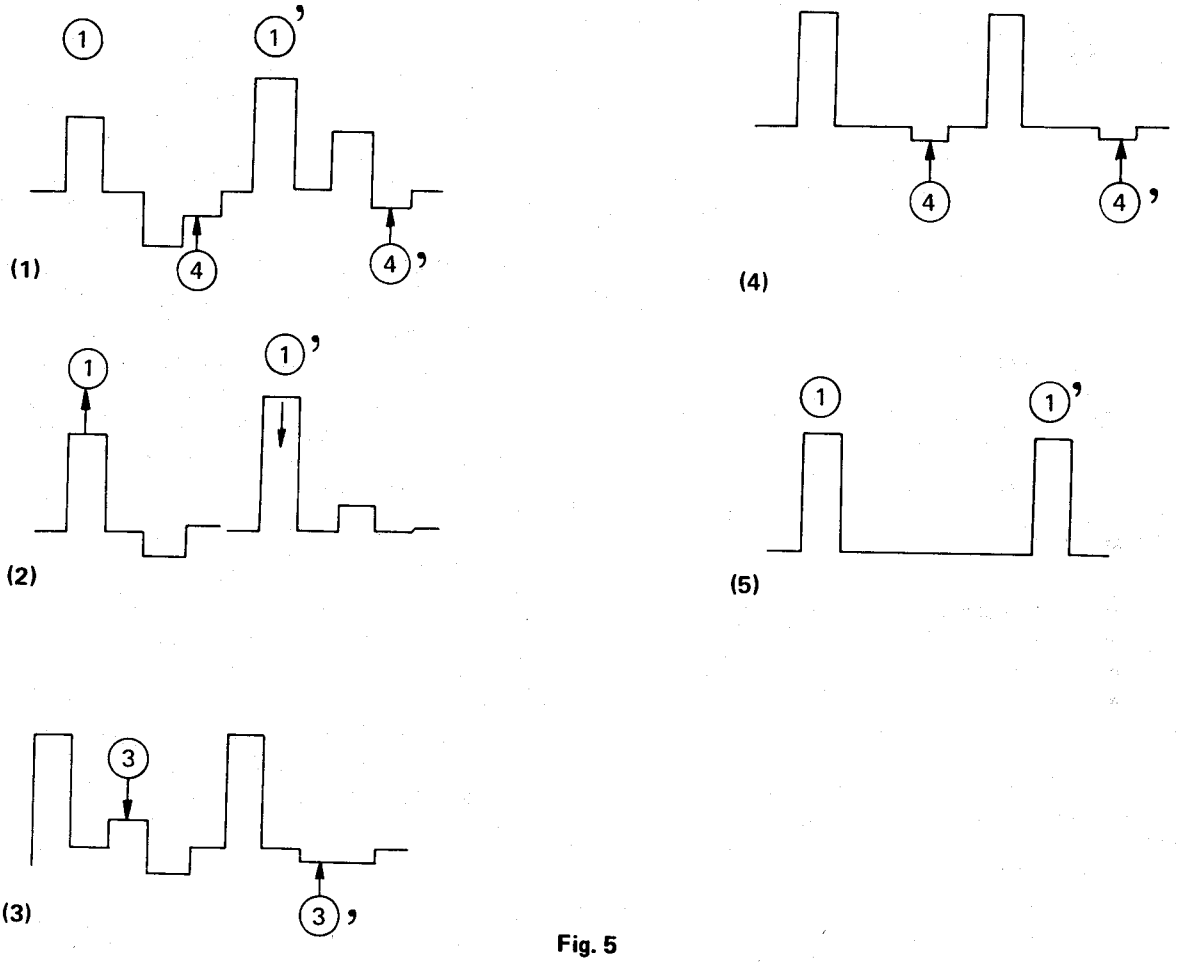
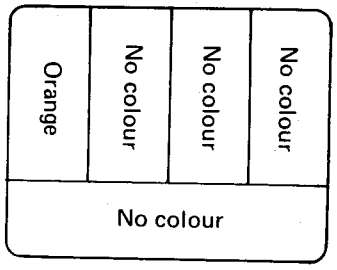


Fig. 5



Picture of demod signal adjusted correctly

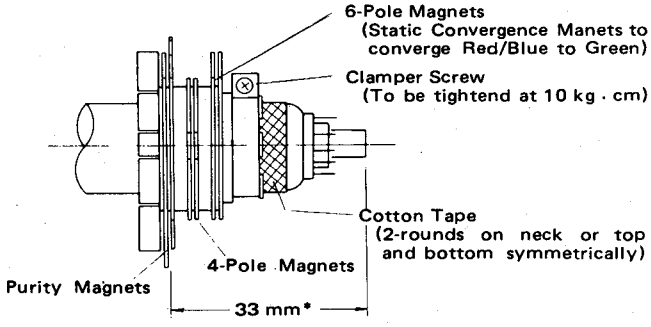
Fig. 6

7. PURITY & CONVERGENCE ADJUSTMENT

7-1. Putiry Adjustment

(Adjustment should be attempted immediatly after 10 minutes preheating with full brightness and contrast.)

a. Degauss entire surface of picture tube, cabinet side, top and back.
b. Tune the receiver to monoscope pattern.
c. Before attempting any adjustment, make sure static magnets are fixed in right position **(Fig. 7)** and tabs of (A) Purity Magnets, (B) 4-Pole Magnets, and (C) 6-Pole Magnets are at the position illustrated in **Fig. 8.**


6-Pole Magnets
(Static Convergence Manets to converge Red/Blue to Green)
Clamper Screw
(To be tightend at 10 kg · cm)
Cotton Tape
(2-rounds on neck or top and bottom symmetrically)
4-Pole Magnets
Purity Magnets
33 mm*

* Distance between centre of Purity Magnets and CRT stem end should be 33 mm.

Fig. 7 Magnet assembly side view

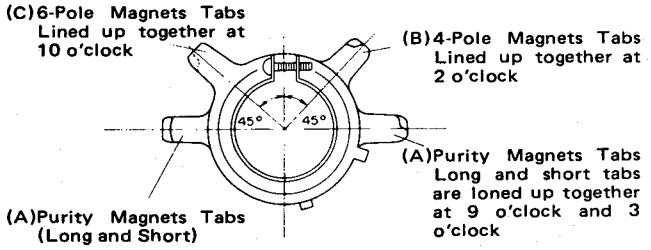

(C)6-Pole Magnets Tabs Lined up together at 10 o'clock
(B)4-Pole Magnets Tabs Lined up together at 2 o'clock
45°
45°
(A)Purity Magnets Tabs Long and short tabs are loned up together at 9 o'clock and 3 o'clock
(A)Purity Magnets Tabs (Long and Short)

Fig. 8 Magnets tabs position viewed from back

NOTE:

1. If the each two tabs of 4-Pole Magnets and 6-Pole Magnets are lined up together correctly, it will provide zero magnetic field and R.G.B. static convergence error should be minimal.
2. Procedure of the coarse adjustment of static convergence is described in paragraph 7-3, (a) through (g).

d. Remove "G" tip from VIDEO PWB to provide magneta raster with R. & B.
e. Loosen Deflection Yoke clamp and slide the yoke backward.
f. Rotate the Purity Magnets for same angle in opposite directions from their original setting positions by both longer tabs lined up with short tabs at 9 o'clock and 3 o'clock position until the Magneta vertical stripe is positioned in the centre of the screen.
g. Slide the yoke forward to obtain the best purity and tighten the clamp tentatively. If the yoke tends to bow down, insert an auxiliary wedge between picture tube funnel and the yoke gap from top side.
h. Connect "G" tip to VIDEO PWB and make sure the purity with White raster. Repaeat the steps (d) through (h) if necessary.
i. Slide the Service Switch (SW701) to provide a horizontal line on the screen. If the horizontal line is tilted, rotate the deflection yoke until the horizontal line is positioned within ±5mm from the geometrical centre of the screen.
   If the horizontal line is not positioned within the above tolerance by the yoke rotation, rotate the Purity Magnets by maintaining the preset angle between both longer tabs until the horizontal line is positioned within the tolerance.

NOTE:

Adjust vertical centre, too, by means of purity magnets.

j. Slide the Service Switch (SW701) to the normal position and ckeck the purity.
   If the Purity Magnets were rotated at step (i), make sure to touch up the purity with Magneta raster.
k. Repeat steps (d) through (j) if necessary.
l. Tighten the deflection yoke clamper with 10 kg-cm.

7-2. After the purity adjustment, picture tube focus should be adjusted for the best point.

Turn the TV to the monoscope pattern and adjust the focus with maximum brightness and contrast as illustrated in **Fig. 9.**

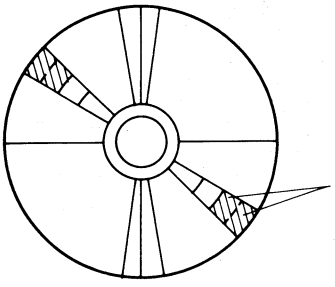


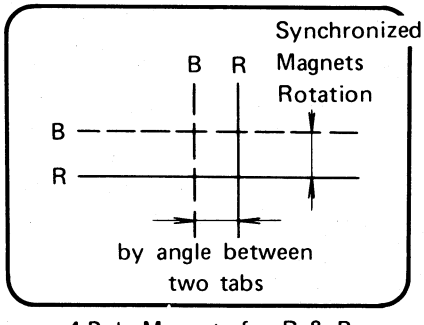
Fig. 9

NOTE:

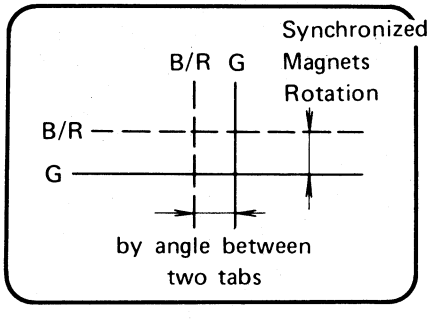
As the static convergence of the PIS system CRT varies with focus voltage, it is necessary to adjust CRT focus right after the Purity adjustment and before attempting the static convergence adjustment.

7-3. Static Convergence Adjustment

a. Tune the reciever to a crosshatch pattern and adjust the brightness and the contrast just high enough to observe the pattern clearly.
b. Remove "G" tip from the VIDEO PWB to provide Red and Blue only on the screen.
c. Adust 4-Pole Magnets by rotating two lined up tabs in opposite directions to converge Red and Blue vertical lines at the centre of the screen. See **Fig.8.**
d. Rotate the 4-Pole Magnets together by maintaining preadjusted angle between two tabs to converge Red and Blue horizontal lines at the centre of the screen. If the operation misconverges vertical lines, touch up preadjusted angle between the two tabs to correct it. **(Fig. 10)**
e. Connect "G" tip to the VIDEO PWB to provide Red, Blue and Green on the screen.
f. Adjust 6-Pole Magnets by rotating two lined up tabs in opposite directions to converge Red/Blue and Green vertical lines at the centre of the screen. See **Fig. 8.**
g. Rotate the 6-Pole Magnets together by maintaining preadjusted andgle between two tabs to converge Red/Blue and Green horizontal lines at the centre of the screen.
h. With the steps (c) through (g), Red/Blue and Green should be converged at the centre of the screen.
k. Tighten the lock Ring carefully without moving any combinations of the adjusted magnets.



4-Pole Magnets for R & B

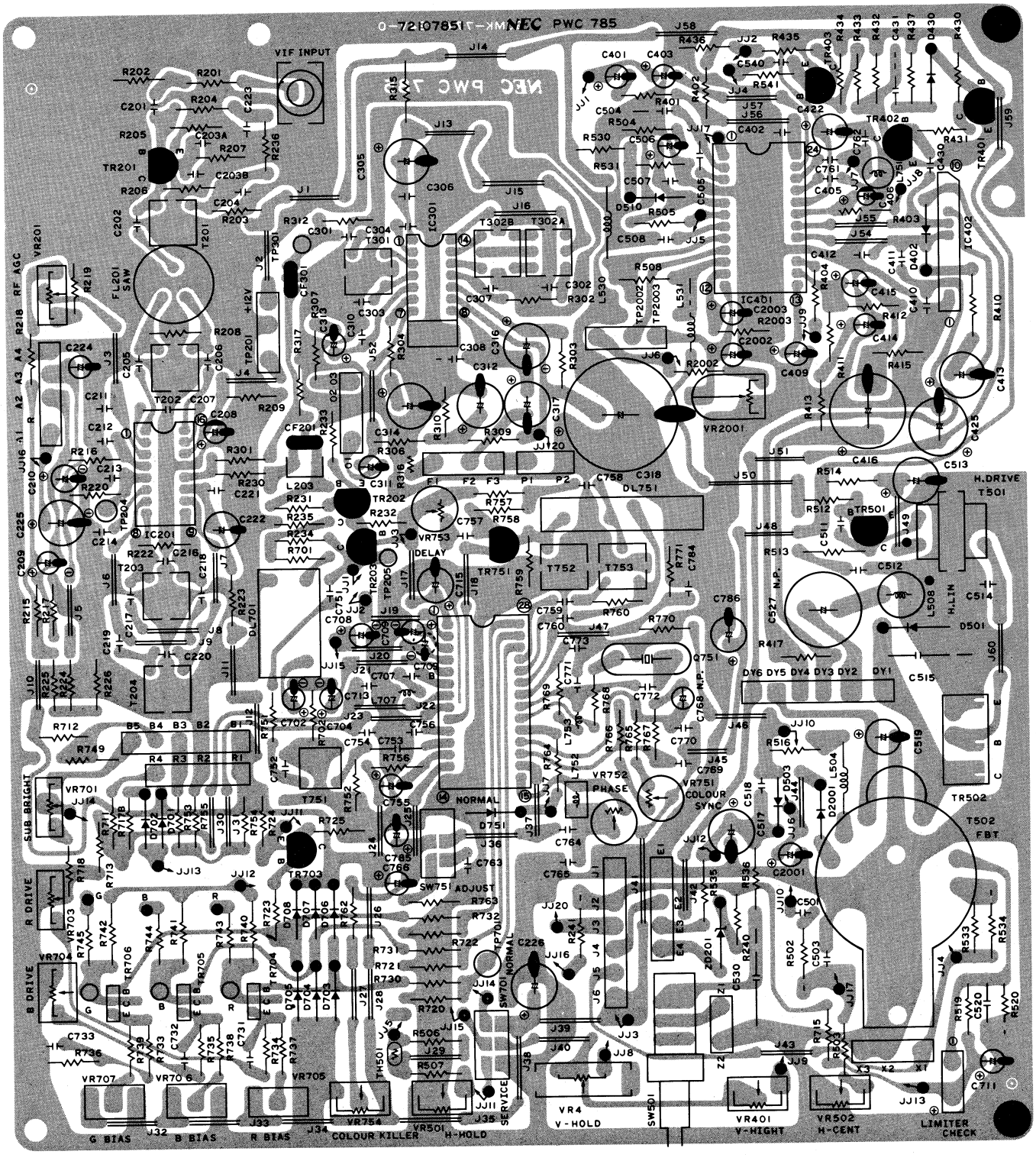


6-Pole Magnets for B/R & G

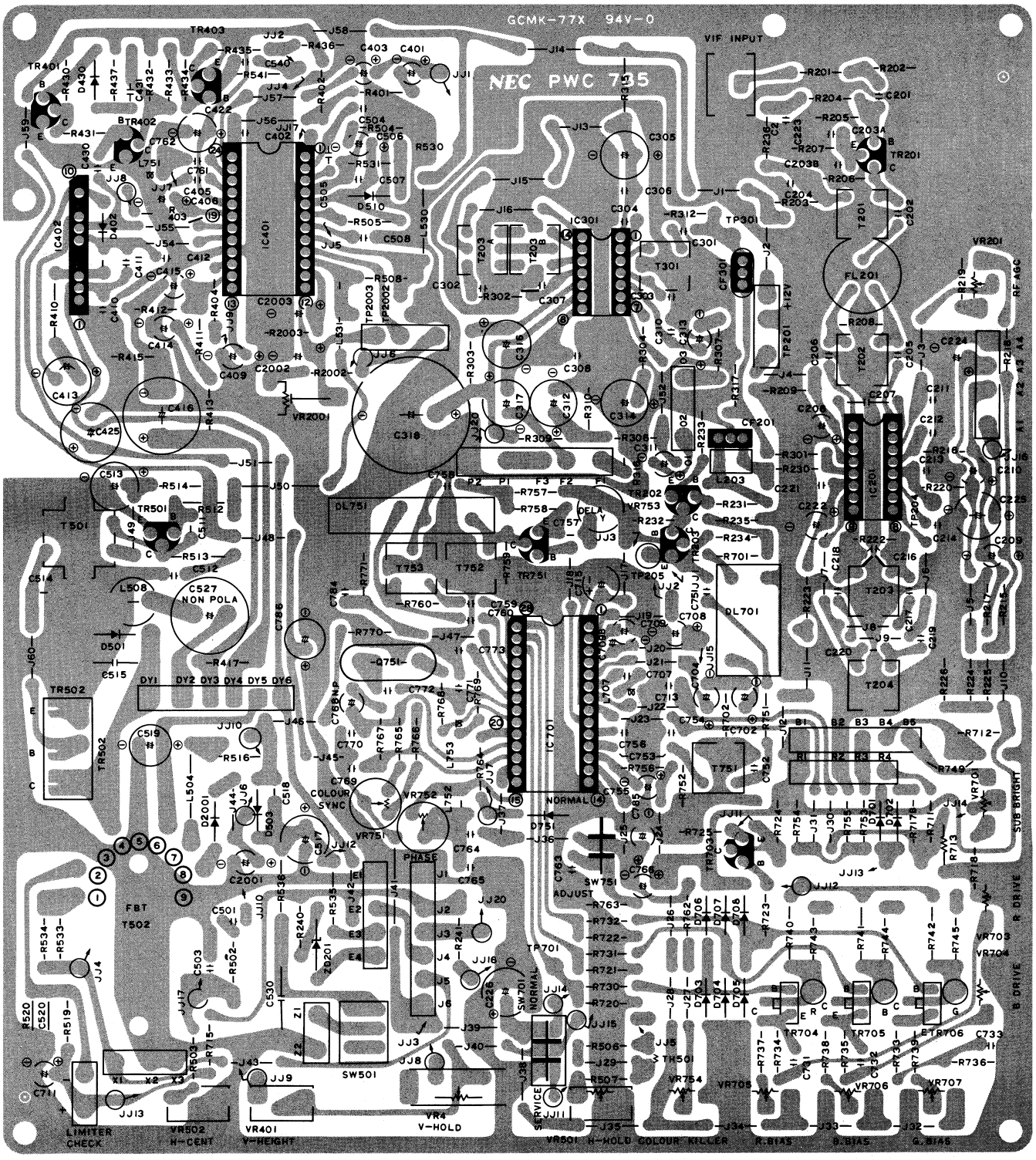
Fig. 10 Screen centre static convergence adjustment

MAIN PWB ASSEMBLY
(PWC-785)

Component Side

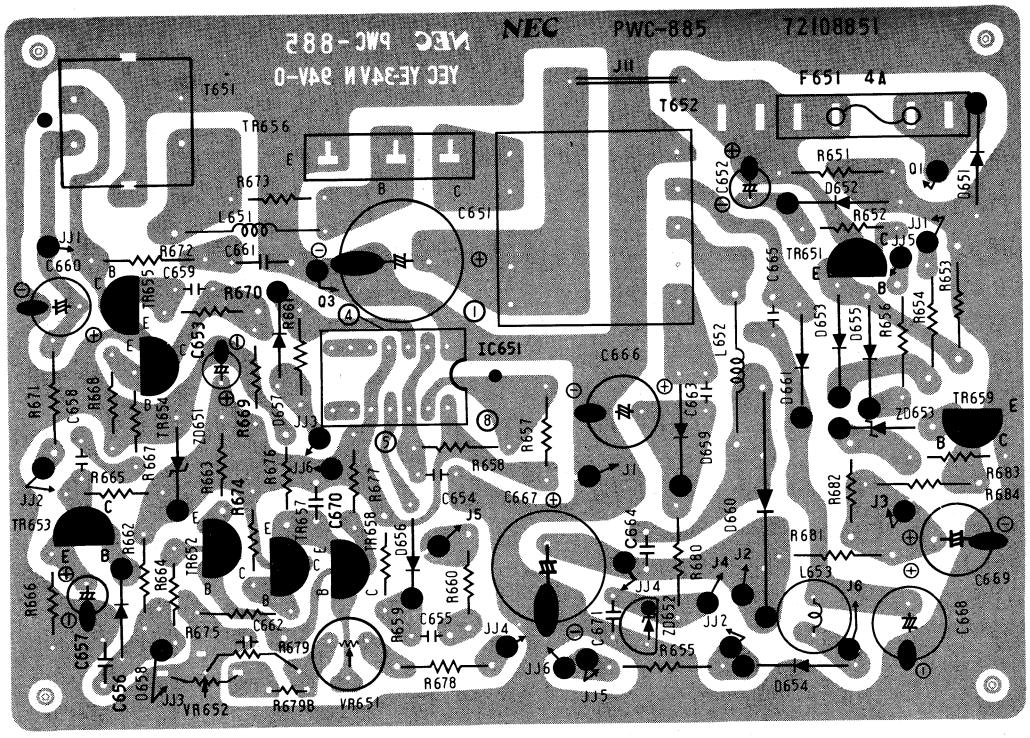


Solder Side

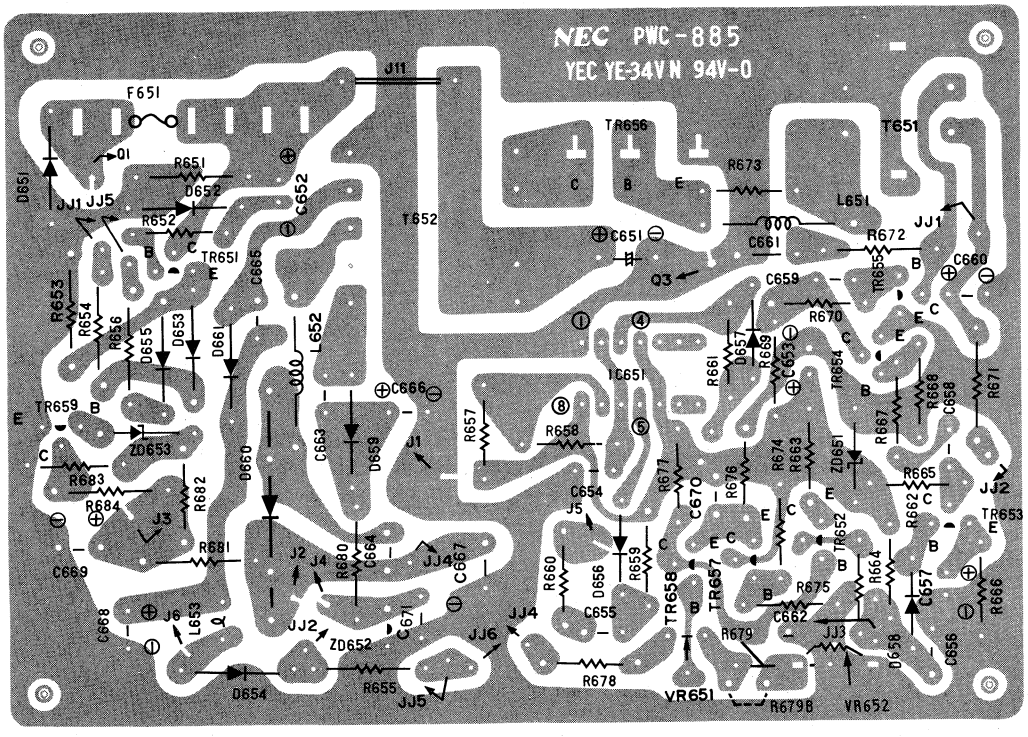

GCMK-77X 94V-0
NEC PWC 735
VIF INPUT
TR401
TR402
TR403
IC401
IC301
IC201
IC701
FBT
T502
SW501
SW751
TP701
VR401
V-HEIGHT
VR502
H-CENT
VR4
V-HOLD
VR501
H-HOLD
COLOUR KILLER
R.BIAS
B.BIAS
G.BIAS
SERVICE
ADJUST
NORMAL
PHASE
COLOUR SYNC
LIMITER CHECK
R DRIVE
B DRIVE
SUB BRIGHT
DY1 DY2 DY3 DY4 DY5 DY6
C527 NON POLA

DC-PS PWB ASSEMBLY
(PWC-885)

Component Side

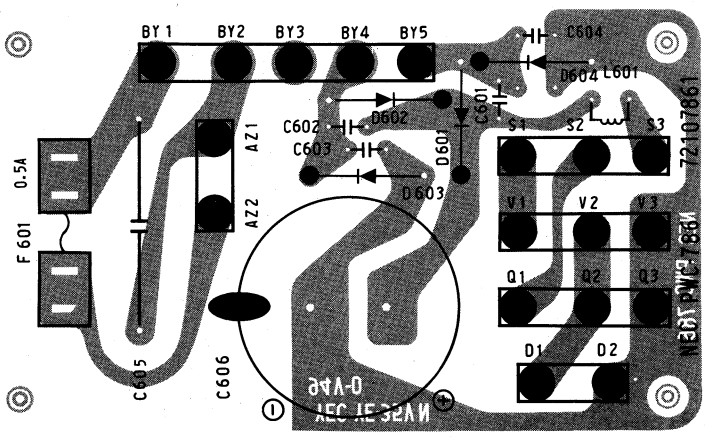


Solder Side

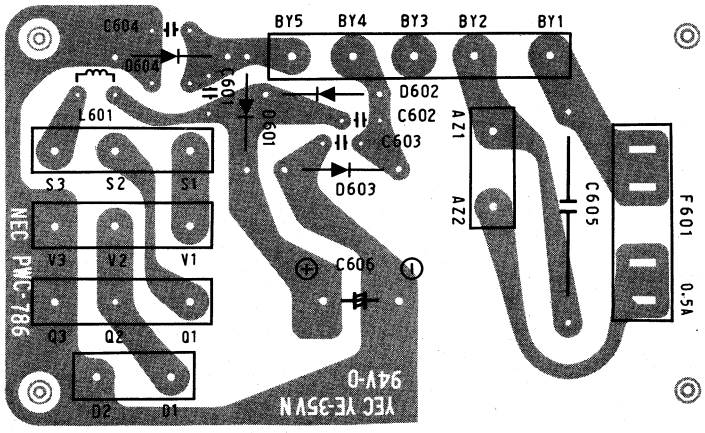


AC-PS PWB ASSEMBLY
(PWC-786)

Component Side

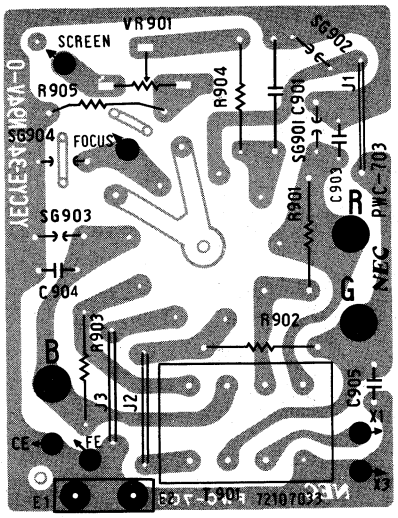


Solder Side

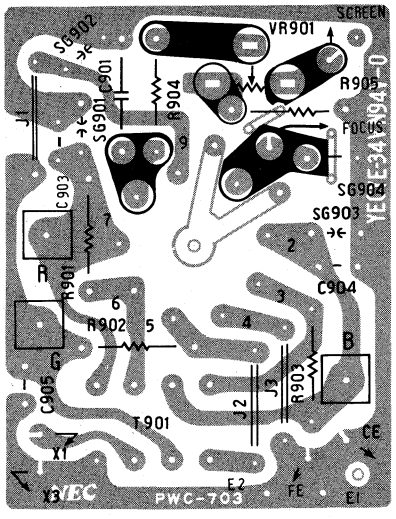


CRT PWB ASSEMBLY
(PWC-703)

Component Side

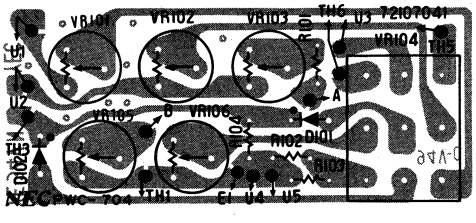


Solder Side

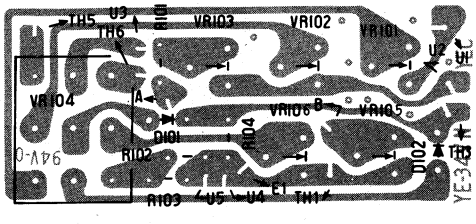


TUNER PWB ASSEMBLY
(PWC-704)

Component Side

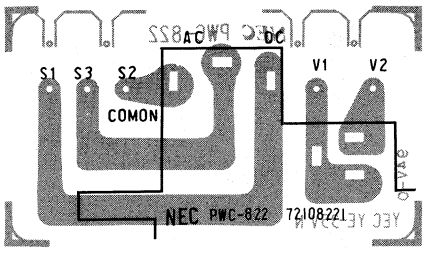


Solder Side

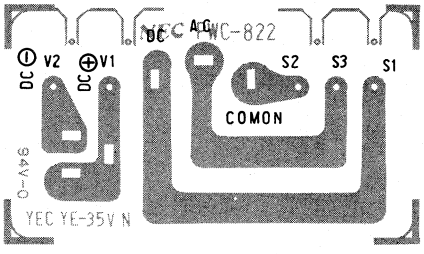


SOCKET TERMINAL PWB ASSEMBLY
(PWC-822)

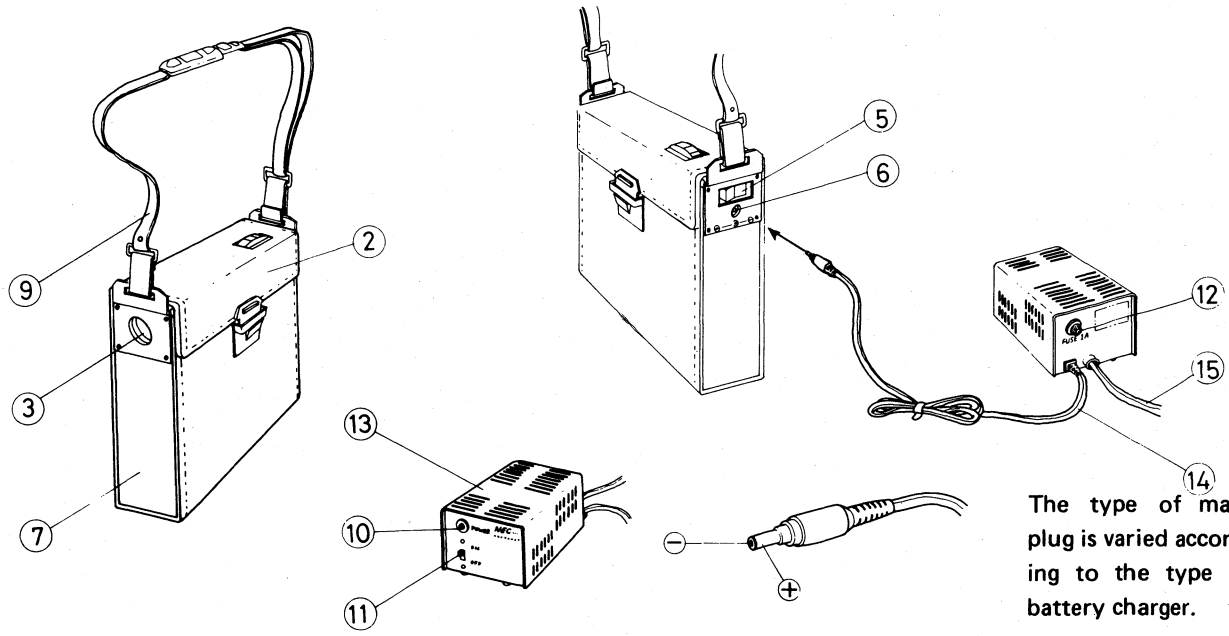
Component Side



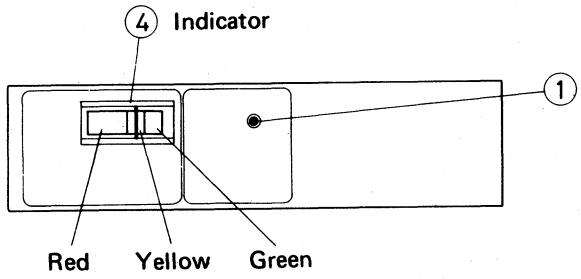
Solder Side

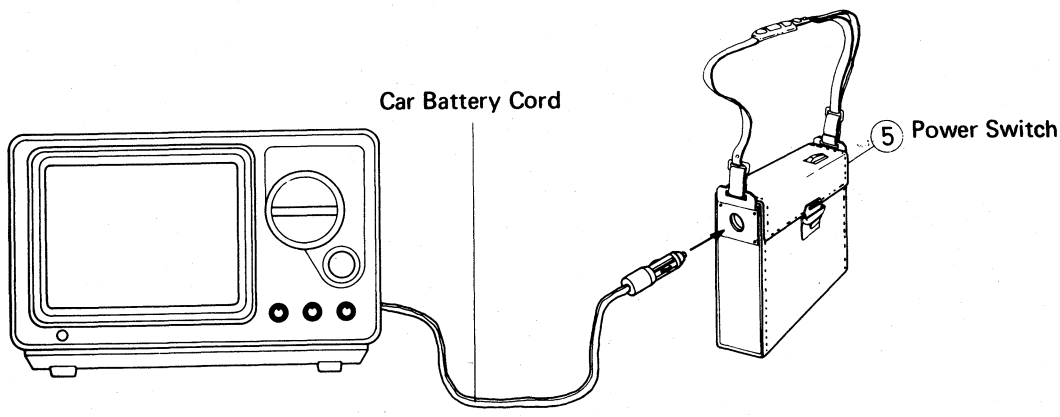


BATTERY PACK AND CHARGER



The type of main plug is varied according to the type of battery charger.





DESIGNATION

1. Breaker (hidden under the upper cover)
2. Upper Cover
3. Output Socket
4. Voltage Checker
5. Power Switch
6. Charger Socket
7. Battery Case
9. Shoulder Belt
10. Power Indicator
11. Power Switch
12. Fuse
13. Charger
14. Charge Plug
15. AC Plug

CHARGING METHOD

- To charge your battery pack, set the power switch (5) to "ON", insert the charge plug (14) into the charge socket (6), connect the AC plug (15) to the AC plug socket, and set the power switch of the charger (11) to "ON".
- At the beginning of charge, the voltage checker indicator stays in the red zone, and it moves into the green zone when the charge comes near to the end.
- The charging time can be found by the voltage checker when its indicator enters into the red zone. That is, the charging continues for about 12 hours while the indicator moves from the red zone to the green zone, and the charged ampere-hour is about 80% of its full capacity. By additional 24-hour charge, the battery can be almost fully charged to 100%.
- Do not continue the charge for over 100 hours.

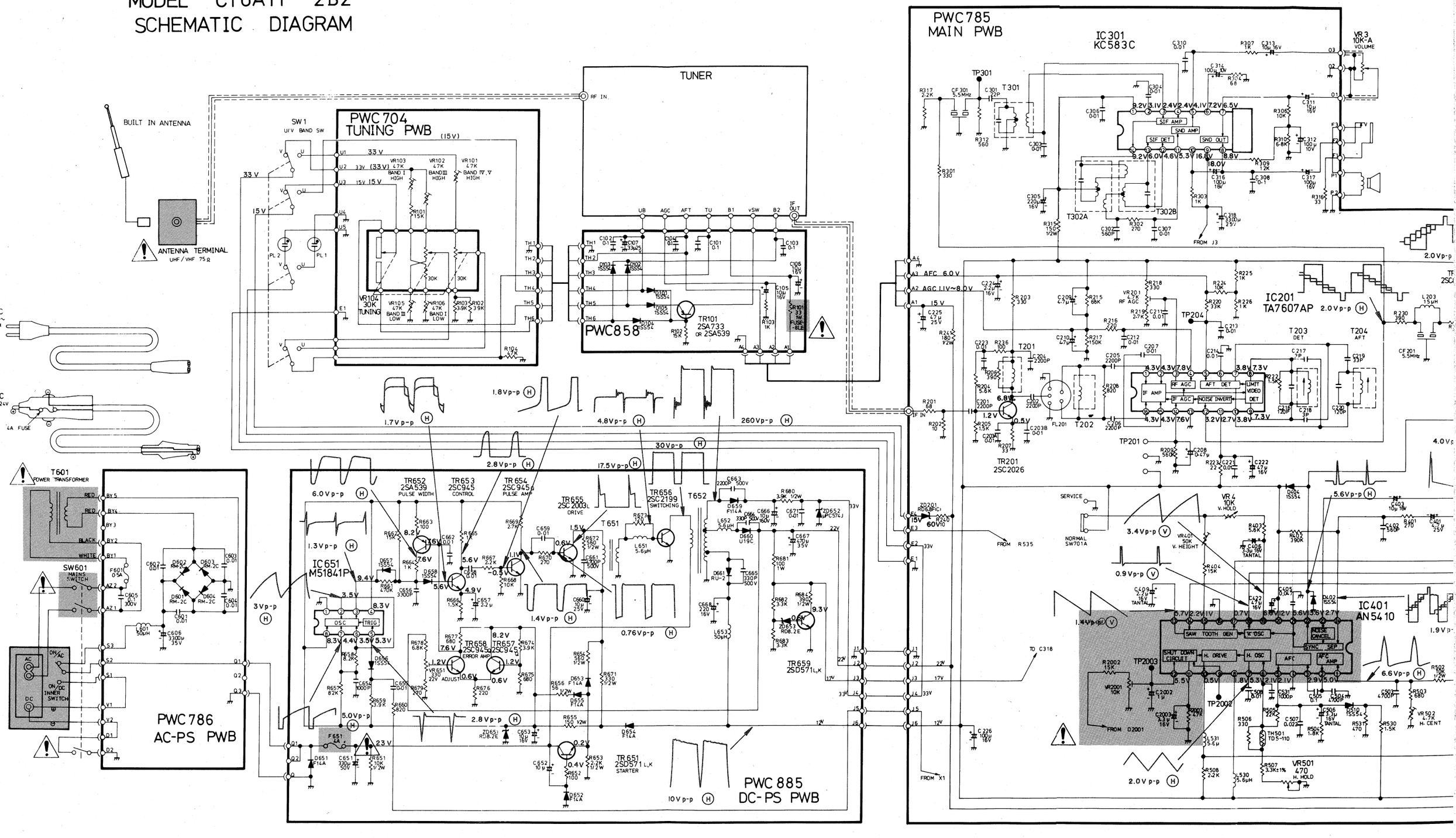
HOW TO USE NEC BATTERY PACK LB-2

JOINT USE WITH CT-6A1P-2B2

1. Connect the TV power socket and the output socket of the Battery Pack with the attached car battery cord.
2. Set the power switch (5) of the battery pack to "ON", and turn on the CT-6A1P-2B2 power switch.
   For channel selection please read the instruction manual of TV set.
3. With a fully charged battery pack you can enjoy TV programs for about 4 hours.

—MEMO

MODEL CT6A1P 2B2
SCHEMATIC DIAGRAM



THIS SCHEMATIC DIAGRAM IS FUNDAMENTAL AND SUBJECT TO CHANGE.

SAVE THIS SCHEMATIC DIAGRAM FOR LATER SERVICE.

RUN NO. I

IC701 μPC1365C

PWC703 CRT PWB

T901

PICTURE TUBE 160AB22(Y)

IC402 AN5510

IC401 AN5410

T751

T752

T753

T501 H. DRIVE

T502 F.B.T

TR501 2SC2003L H. DRIVE

TR591 2SC940Q H. OUT

TR751 2SA733P,Q

TR752 2SA733P,Q

TR703 2SC828O,P

TR704 2SC2371L R. OUT

TR705 2SC2371L B. OUT

TR706 2SC2371L G. OUT

TR202 2SC828O,P

TR203 2SC828O,P

TR401 2SC945P,Q 2SC828O,P

TR402 2SC945P,Q 2SC828O,P

TR403 2SA733 P,Q

SW501 DEGAUSSING SW PUSH DEGAUSS

DEGAUSSING COIL

DEFLECTION YOKE

V-COIL

H-COILS

H.V. REC UNIT

FOCUS

SERVICE

NORMAL

2SC2026

2SC945 2SC2003 2SA539 2SA733 2SC838

2SC2371

2SD571

2SC940 2SC2199

NOTE
E Emitter
B Base
C Collector

NOTES

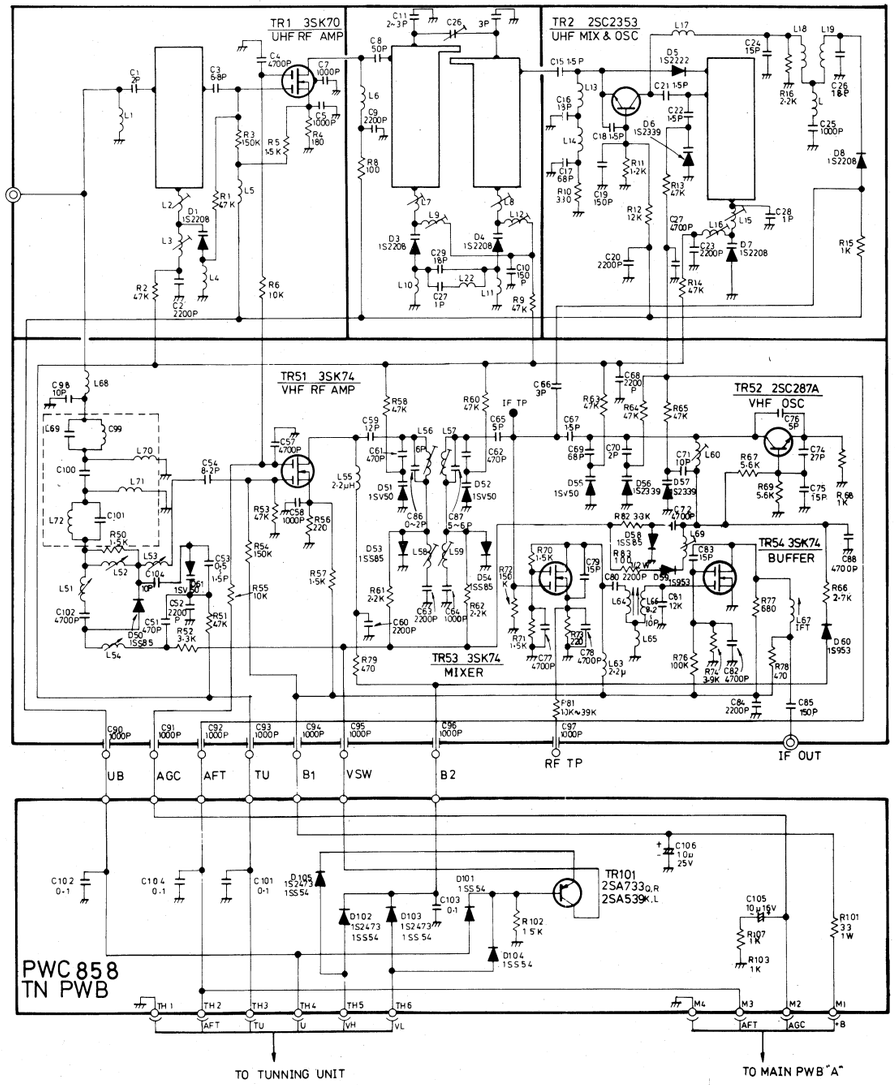
(1) RESISTOR VALUES ARE IN Ω(OHM) K=1000Ω M=1000000Ω
(2) ALL RESISTORS ARE 1/4 WATT. EXCEPT WHERE OTHERWISE INDICATED.
(3) CAPACITOR VALUES ARE , IN μF UNLESS OTHERWISE INDICATED. P= PF
(4) ALL CAPACITORS ARE 50VOLTS EXCEPT WHERE OTHERWISE INDICATED
(5) VOLTAGES AND WAVEFORMS MEASURED UNDER AVERAGE COLOR SIGNAL INPUT AND CONTRAST, BRIGHTNESS, CONTROL AT MAXIMAM, ALL OTHER CONTROLS SET FOR NORMAL OPERATION.
(6) (H)----HORIZONTAL RATE. (V)----VERTICAL RATE.

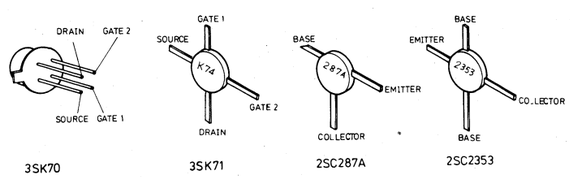
WARNING
CONTROL(S) MARKED ※ IS PARMANENTLY FROZEN.
DO NOT ATTEMPT TO DEFEAT OR IMPROPERLY REPLACE.

WARNING
REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS ARE IDENTIFIED BY ⚠ SHADING ON THE SCHEMATICS.
REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS.
DON'T DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

CF6AIP·2B2
78067941

UHF VHF
CONBINATION TUNER





3SK70 3SK71 2SC287A 2SC2353

REPLACEMENT PARTS LIST

SYMBOL	PARTS NO.	DESCRIPTION	Q'TY PER UNIT	REMARKS
Transistors				
TR652	35002712	Transistor, 2SA539 L	1	
TR403	35003516	Transistor, 2SA733 P	1	
TR751	35003517	Transistor, 2SA733 Q	1	
TR202, 203, 703	35045416	Transistor, 2SC-828 P	3	
TR502	35046217	Transistor, 2SC940 S	1	
TR401, 402	35047216	Transistor, 2SC945 P	2	
TR653, 654, 657, 658	35047217	Transistor, 2SC945 Q	4	
TR201	35053700	Transistor, 2SC2026	1	
TR704 – 706	35053812	Transistor, 2SC2371 L	3	
TR656	35054000	Transistor, 2SC2199	1	
TR501, 655	35054112	Transistor, 2SC2003 L	2	
TR651, 659	35064212	Transistor, 2SD571 L	2	
Diodes				
D101, 656 – 658	36001015	Diode, SI-1SS54	4	
ZD651, 653	36003034	Diode, Zener RD-2E	2	
ZD652	36003049	Diode, Zener MPC-574J	1	
ZD201	36003095	Diode, RD-8F (C)	1	
D430, 510, 701 703 – 708, 751	360K1015	Diode, SI-1SS54	10	
D702	360K2015	Diode, GE-1N34A	1	
D651 – 655	36107065	Rectifier, SI-F14A	5	
D402	36107075	Rectifier, SI-F14A-P	1	
D601 – 604	36107079	Rectifier, SI-RM-2C	4	
D661	36107166	Rectifier, SI-RU-2	1	
D501	36107259	Rectifier, SI-CGJ-1	1	
D659	36107263	Rectifier, SI-F114E	1	
D660	36107278	Rectifier, SI-U19C	1	
D2001, 503	361K7160	Rectifier, SI-TVR-06G	2	
TH501	38102015	Thermistor, TD5-110	1	

SYMBOL	PARTS NO.	DESCRIPTION	Q'TY PER UNIT	REMARKS

Integrated Circuits

IC301	37001012	IC, KC583C	1	
IC701	37003015	IC, MPC1365C	1	
IC402	37006006	IC, AN5510	1	
IC201	37007011	IC, TA7607AP (VIF)	1	
IC401	37009008	IC, AN5410	1	
IC651	37051033	IC, M51841P	1	

Electrical Parts

LC701	39020003	Coil, Trap 4.4MHz	1	
	39501028	H. V. Rectifier	1	
T601	45099032	Trans, Power	1	
T501, 651	45802001	Trans, H. Drive	2	
T901	46304001	Trans Heater	1	
T652	46307001	Trans DC-DC OUT	1	
T502	47105078	F. B. T	1	
	48007031	Deflection Yoke	1	
	49005005	Magnet Assembly, Static	1	
	5863435D	Tuner, Comb (ED3435)	1	
T203, 204	60226029	V. IFT, P DET-AFT	2	
T201	60226035	Coil (A)	1	
T202	60226036	Coil (B)	1	
T301	60305007	S, IFT INP	1	
T302A	60331009	Trans, Ratio Detector 5.5MHz	1	
T302B	60331010	Trans, Ratio Detector, 5.5MHz	1	
T751	60517016	Filter, Chroma Band Pass	1	
T752	60565009	Coil	1	
T753	60565010	Coil	1	
L508	60917017	Coil, H. LIN	1	
L651, 652	61005004	Coil, Filter 5.6μH	2	
L654	61011018	Coil, Choke	1	
L203	61013015	Coil, Filter 15μH	1	
L752	61013019	Coil, Filter 33μH	1	
L753	61051514	Coil, Filter 5.6μH	1	
L601, 653	61055003	Coil, Filter 50μH	2	
L751	61064055	Coil, Filter S472J	1	
L504, 530, 531	610F6014	Coil, Filter P5R6KA, T	3	
CF301	61102003	SIF Filter SFE 5.5MB	1	
CF201	61111004	Ceramic Trap 5.5MHz	1	

SYMBOL	PARTS NO.	DESCRIPTION	Q'TY PER UNIT	REMARKS
FL201	61120006	VIF SAWF 38M F1024	1	
	61301103	Coil, Degaussing	1	
DL751	61511008	Delay Line	1	
DL701	61511019	Delay Line	1	
	62091120	Whip Antenna	1	
	63001520	Speaker, 77mm 32Ω 0.8W	1	
	63561001	Earphone	1	
Q751	64003005	X tal	1	
SW1	65043003	Switch, Rotary	1	
SW701, 751	65105101	Switch, Slide	2	
SW601	65399008	Switch, Push Button	1	
SW501	65399009	Switch, Push Button	1	
F651	66602007	Fuse 4A	1	
F601	66671010	Fuse 315mA	1	
SG901 – 903	66705001	Spark Gap 1.2KV	3	
SG904	66705005	Spark Gap 4.0KV	1	
PL1, 2	67301005	Glow Lamp FL	2	
	70031027	Socket, CRT	1	
	70051052	Jack	1	
	70101009	Socket, Transistor	2	
	70102001	Socket, IC 14PIN	1	
	70102002	Socket, IC 16PIN	1	
	70102009	Socket, IC 24PIN	1	
	70102010	Socket, IC 28PIN	1	
	70102104	Socket, IC 10PIN	1	
	70301502	Stop-Gap, Deflection Yoke	1	
	70301503	Cover, Wire	1	
	70505017	Jack, Earphone	1	
	70521030	Connector Power	1	
	70706050	Cable Connector	1	
	70800002	Line Code, (E) AC	1	
	70800501	Line Code, (DC)	1	
	71121480	Terminal Board, ANT	1	
	71205033	Fuse Holder	4	
	71205034	Fuse Holder	4	
	93959A01	AC-PS PWB Assembly	1	
	93959B01	DC-PS PWB Assembly	1	
	93959F01	Main PWB Assembly	1	
	93959G01	CRT PWB Assembly	1	
	93959W01	Socket Terminal PWB Assembly	1	
	93959Y01	Tuner PWB Assembly	1	

SYMBOL	PARTS NO.	DESCRIPTION	Q'TY PER UNIT	REMARKS

Controles

VR1	41053004	R. Variable,	10KΩ			1	
VR3	41053008	R. Variable,	10KΩ	0.2W		1	
VR901	41056110	R. Variable,	3MΩ	0.5W		1	
VR2, 6	41057022	R. Variable,	10KΩ	0.1W		2	
VR4	41057171	R. Variable	10KΩ	0.1W		1	
VR752, 753	41061002	R. Variable	1KΩ	0.15W		2	
VR651	41061504	R. Variable	330Ω			1	
VR751	41061510	R. Variable	3.3KΩ			1	
VR2001	41067079	R. Variable	10KΩ	0.1W		1	
VR703, 704	41067104	R. Variable	500Ω	0.1W		2	
VR705 –707	41067107	R. Variable	3KΩ	0.1W		3	
VR754	41067108	R. Variable	5KΩ	0.1W		1	
VR701	41067109	R. Variable	10KΩ	0.1W		1	
VR501	41067204	R. Variable	470Ω	0.1W		1	
VR201, 502	41067208	R. Variable	4.7KΩ	0.1W		2	
VR401	41067212	R. Variable	50KΩ			1	
VR104	41099049	R. Variable	30KΩ	0.1W		1	
VR101 –103, 105, 106	41504116	R. Variable	47KΩ	0.5W		5	

Resistors

R772, 773	40003006	R. Solid,	2.7Ω	10%	½W	2	
R515	40003007	R. Solid,	3.3Ω	10%	½W	1	
R656	40003022	R. Solid,	56Ω	10%	½W	1	
R655	40003027	R. Solid	150Ω	10%	½W	1	
R241	40003028	R. Solid	180Ω	10%	½W	1	
R671	40003031	R. Solid	330Ω	10%	½W	1	
R684	40003032	R. Solid	390Ω	10%	½W	1	
R654, 672	40003034	R. Solid	560Ω	10%	½W	2	
R653	40003041	R. Solid	2.2KΩ	10%	½W	1	
R680	40003044	R. Solid	3.9KΩ	10%	½W	1	
R651	40003049	R. Solid	10KΩ	10%	½W	1	
R904	40023069	R. Solid	470KΩ	10%	½W	1	
R905	40023078	R. Solid	2.7MΩ	10%	½W	1	
R315	400K3527	R. Solid	150Ω	10%	½W	1	
R513	400K3532	R. Solid	390Ω	10%	½W	1	
R502	400K3549	R. Solid	10KΩ	10%	½W	1	
R535	400K3556	R. Solid	39KΩ	10%	½W	1	
R520	400K3561	R. Solid	100KΩ	10%	½W	1	

SYMBOL	PARTS NO.	DESCRIPTION				Q'TY PER UNIT	REMARKS
R901 – 903	40102157	R, Carbon	220Ω	5%	¼W	3	
R223	40102633	R, Carbon	22Ω	5%	¼W	1	
R201, 304, 751	40106145	R, Carbon	68Ω	5%	¼W	3	
R652, 663	40106149	R, Carbon	100Ω	5%	¼W	2	
R673	40106151	R, Carbon	120Ω	5%	¼W	1	
R676	40106157	R, Carbon	220Ω	5%	¼W	1	
R670, 679	40106159	R, Carbon	270Ω	5%	¼W	2	
R675, 677	40106169	R, Carbon	680Ω	5%	¼W	2	
R660	40106171	R, Carbon	820Ω	5%	¼W	1	
R430, 664, 665	40106173	R, Carbon	1KΩ	5%	¼W	3	
R666	40106177	R, Carbon	1.5KΩ	5%	¼W	1	
R667	40106181	R, Carbon	2.2KΩ	5%	¼W	1	
R669	40106183	R, Carbon	2.7KΩ	5%	¼W	1	
R682, 683	40106185	R, Carbon	3.3KΩ	5%	¼W	2	
R659, 674	40106187	R, Carbon	3.9KΩ	5%	¼W	2	
R678	40106193	R, Carbon	6.8KΩ	5%	¼W	1	
R658	40106195	R, Carbon	8.2KΩ	5%	¼W	1	
R668	40106197	R, Carbon	10KΩ	5%	¼W	1	
R662	40106201	R, Carbon	15KΩ	5%	¼W	1	
R220	40106029	R, Carbon	33KΩ	5%	¼W	1	
R657	40106219	R, Carbon	82KΩ	5%	¼W	1	
R402	40106235	R, Carbon	390KΩ	5%	¼W	1	
R661	40106237	R, Carbon	470KΩ	5%	¼W	1	
R316	40112137	R, Carbon	33Ω	5%	¼W	1	
R103	40112175	R, Carbon	1.2KΩ	5%	¼W	1	
R101	40112201	R, Carbon	15KΩ	5%	¼W	1	
R102	40112211	R, Carbon	39KΩ	5%	¼W	1	
R104	40112213	R, Carbon	47KΩ	5%	¼W	1	
R415, 533, 534	401K2609	R, Carbon	2.2Ω	5%	¼W	3	
R202, 240	401K2625	R, Carbon	10Ω	5%	¼W	2	
R207	401K2637	R, Carbon	33Ω	5%	¼W	1	
R512	401K2643	R, Carbon	56Ω	5%	¼W	1	
R236, 757, 758	401K2649	R, Carbon	100Ω	5%	¼W	3	
R216, 733	401K2657	R, Carbon	220Ω	5%	¼W	2	
R234, 302, 401, 730 – 732, 734 – 736	401K2659	R, Carbon	270Ω	5%	¼W	9	
R203, 218, 301, 506	401K2661	R, Carbon	330Ω	5%	¼W	4	
R206, 230, 759	401K2663	R, Carbon	390Ω	5%	¼W	3	
R531	401K2665	R, Carbon	470Ω	5%	¼W	1	
R312	401K2667	R, Carbon	560Ω	5%	¼W	1	
R235, 503	401K2669	R, Carbon	680Ω	5%	¼W	2	
R208, 771	401K2671	R, Carbon	820Ω	5%	¼W	2	
R225, 226, 231 – 233, 303 307, 417, 436, 519, 725 764, 767, 768	401K2673	R, Carbon	1KΩ	5%	¼W	14	

SYMBOL	PARTS NO.	DESCRIPTION				Q'TY PER UNIT	REMARKS
R205, 222, 530, 701, 769	401K2677	R, Carbon	1.5KΩ	5%	¼W	5	
R504	401K2679	R, Carbon	1.8KΩ	5%	¼W	1	
R317, 435, 508, 702, 760	401K2681	R, Carbon	2.2KΩ	5%	¼W	5	
R219, 412, 737 – 739 743 – 745	401K2683	R, Carbon	2.7KΩ	5%	¼W	8	
R413, 432, 720 – 724	401K2685	R, Carbon	3.3KΩ	5%	¼W	7	
R204, 403, 752	401K2691	R, Carbon	5.6KΩ	5%	¼W	3	
R310, 411, 749	401K2693	R, Carbon	6.8KΩ	5%	¼W	3	
R224, 306, 433	401K2697	R, Carbon	10KΩ	5%	¼W	3	
R309	401K2699	R, Carbon	12KΩ	5%	¼W	1	
R2002, 404, 434, 770	401K2701	R, Carbon	15KΩ	5%	¼W	4	
R431, 437, 712	401K2705	R, Carbon	22KΩ	5%	¼W	3	
R715, 755, 765, 766	401K2707	R, Carbon	27KΩ	5%	¼W	4	
R505, 717B	401K2709	R, Carbon	33KΩ	5%	¼W	2	
R754	401K2711	R, Carbon	39KΩ	5%	¼W	1	
R2003, 713	401K2713	R, Carbon	47KΩ	5%	¼W	2	
R718	401K2715	R, Carbon	56KΩ	5%	¼W	1	
R215	401K2717	R, Carbon	68KΩ	5%	¼W	1	
R753	401K2719	R, Carbon	82KΩ	5%	¼W	1	
R536, 711, 763	401K2721	R, Carbon	100KΩ	5%	¼W	3	
R217, 541	401K2725	R, Carbon	150KΩ	5%	¼W	2	
R756	401K2729	R, Carbon	220KΩ	5%	¼W	1	
R762	401K2737	R, Carbon	470KΩ	5%	¼W	1	
R209	401K2739	R, Carbon	560KΩ	5%	¼W	1	
R410	40351121	R, Metal	6.8Ω	5%	1W	1	
R681	40351149	R, Metal	100Ω	5%	1W	1	
R740, 741, 742	40351197	R, Metal	10KΩ	5%	1W	3	
R507	40402685	R, Metal	3.3KΩ	1%	¼W	1	
R2001	40405109	R, Metal	2.2Ω	5%	¼W	1	
R514, 516	40405117	R, Metal	4.7Ω	5%	¼W	2	

Capacitors

C901	42019625	C, Ceramic	1KV	0.01μF	1	
C760	42029525	C, Ceramic	50V	0.01μF	1	
C511	42039557	C, Ceramic	500V	330PF	1	
C512	42039560	C, Ceramic	500V	560PF	1	
C663 – 665	42039567	C, Ceramic	500V	2200PF	3	
C516	42039569	C, Ceramic	500V	3300PF	1	
C661	42039571	C, Ceramic	500V	4700PF	1	
C201, 202, 204 – 206	420A9517	C, Ceramic	50V	2200PF	1	
C203A, 203B, 211 – 214, 221, 223, 303, 304, 306, 310, 713, 754, 756 – 759, 763	420B9525	C, Ceramic	50V	0.01μF	19	

SYMBOL	PARTS NO.	DESCRIPTION				Q'TY PER UNIT	REMARKS
C501, 518	420C9567	C, Ceramic	500V	2200PF		2	
C411	42130209	C, Ceramic	50V	470PF		1	
C302	42130210	C, Ceramic	50V	560PF		1	
C731 – 733	42130211	C, Ceramic	50V	680PF		3	
C531	42130213	C, Ceramic	50V	0.001μF		1	
C655, 658, 659, 662, 671	42130225	C, Ceramic	50V	0.01μF		5	
C601 – 604	42130725	C, Ceramic	50V	0.01μF		4	
C787	42199001	C, Ceramic	50V	0.1μF		1	
C227, 308, 607, 673	42199002	C, Ceramic	50V	0.1μF		4	
C402, 762, 784	421C0210	C, Ceramic	50V	560PF		3	
C207, 753	421C1025	C, Ceramic	25V	0.01μF		2	
C903	42201019	C, Ceramic	500V	5PF		1	
C693, 694	42299007	C, Ceramic	50V	1000PF		2	
C751, 764	42311045	C, Ceramic	50V	100PF		2	
C301	42312029	C, Ceramic	50V	22PF		1	
C773	42312063	C, Ceramic	50V	18PF		1	
C707, 720 – 722	42312081	C, Ceramic	50V	100PF		4	
C672	42312101	C, Ceramic	50V	120PF		1	
C216, 220	42313049	C, Ceramic	50V	120PF		2	
C540	42399001	C, Ceramic	500V	10PF		1	
C217, 218	423A2003	C, Ceramic	50V	3PF		2	
C219	423A2069	C, Ceramic	50V	33PF		1	
C765, 771, 772	423A2073	C, Ceramic	50V	47PF		3	
C752	423A2101	C, Ceramic	50V	120PF		1	
C515	42703871	C, Film	400V	0.047μF		1	
C520	42739007	C, Mylar	250V	0.1μF		1	
C410, 412	42754011	C, Mylar	50V	0.047μF		2	
C430	42754055	C, Mylar	50V	2200PF		1	
C761	42754056	C, Mylar	50V	2700PF		1	
C307	42754063	C, Mylar	50V	0.01μF		1	
C405	42754071	C, Mylar	50V	0.047μF		1	
C431	42754073	C, Mylar	50V	0.068μF		1	
C505, 695	42754075	C, Mylar	50V	0.1μF		2	
C503	42754559	C, Mylar	50V	0.0047μF	10%	1	
C691, 692	42754575	C, Mylar	50V	0.1μF	10%	2	
C656	42756107	C, Film	50V	0.0033μF		1	
C508	42799034	C, Film	50V	0.01μF		1	
C654	42799035	C, Film	100V	0.001μF		1	
C530	42799038	C, Film	250V	2.2μF		1	
C507, 769, 770	427E6009	C, Film	50V	0.022μF		3	
C504	427E6059	C, Film	50V	0.0047μF		1	
C605	42802025	C, Metal Film	300V	0.01μF		1	

SYMBOL	PARTS NO.	DESCRIPTION			Q'TY PER UNIT	REMARKS
C517	43005120	C, Elec.	160V	10μF	1	
C312, 314	43011016	C, Elec.	10V	100μF	2	
C653	43011028	C, Elec.	16V	10μF	1	
C509	43011031	C, Elec.	16V	47μF	1	
C226, 316, 317, 513	43011032	C, Elec.	16V	100μF	4	
C305, 668	43011033	C, Elec.	16V	220μF	2	
C715	43011035	C, Elec.	16V	470μF	1	
C660	43011043	C, Elec.	25V	10μF	1	
C519	43011044	C, Elec.	25V	22μF	1	
C107	43011045	C, Elec.	25V	33μF	1	
C225	43011046	C, Elec.	25V	47μF	1	
C413	43011047	C, Elec.	25V	100μF	1	
C425	43011049	C, Elec.	25V	330μF	1	
C667	43011063	C, Elec.	35V	470μF	1	
C709	43011066	C, Elec.	50V	1μF	1	
C657	43011067	C, Elec.	50V	2.2μF	1	
C416	43012037	C, Elec.	16V	2200μF	1	
C414	43014103	C, Elec.	50V	0.47μF	1	
C666	43099003	C, Elec.	160V	10μF	1	
C651	43099020	C, Elec.	50V	330μF	1	
C652	43099033	C, Elec.	50V	10μF	1	
C2003	430A1026	C, Elec.	16V	3.3μF	1	
C222, 422, 786	430A1031	C, Elec.	16V	47μF	3	
C2001, 311, 313, 403, 415, 702, 704, 711	430A1043	C, Elec.	25V	10μF	8	
C224	430A1067	C, Elec.	50V	2.2μF	1	
C209, 210, 401	430A1069	C, Elec.	50V	4.7μF	3	
C766, 785	430A4101	C, Elec.	50V	0.22μF	2	
C2002, 708, 755	430A4105	C, Elec.	50V	1μF	3	
C318	43199013	C, Elec.	25V	3300μF	1	
C606	43199014	C, Elec.	35V	3300μF	1	
C768	43311022	C, Non-Polar	25V	4.7μF	1	
C527	43399010	C, Elec.	35V	2.2μF	1	
C409	435A5051	C, Tantalum	16V	2.2μF	1	
C406, 506	435A5052	C, Tantalum	16V	3.3μF	2	
C208	435A5090	C, Tantalum			1	

Cabinet and Knobs

	24311811	Cabinet, Front	1	
	24311832	Cabinet, Back	1	
	24421173	Handle	1	

SYMBOL	PARTS NO.	DESCRIPTION	Q'TY PER UNIT	REMARKS
	24421214	Case	1	
	24421242	Gear C	1	
	24421331	Gear B	1	
	24423971	Filter, Sun Shield	1	
	24424061	Gear	1	
	24424081	Shaft	1	
	24424162	Cover, Switch	1	
	24425151	Bushing, Insulator	1	
	24463011	Knob-B, Control	1	
	24463031	Knob, Control	1	
	24464161	Button, Push	1	
	24464541	Knob, Tuning	1	
	24464561	Button-A, Push	1	
	24524722	Foot	1	

Accessories and Packing Materials

	24806961	Bag, Polyethylene	1	
	24812941	Filler-A, Carton	1	
	24811295	Filler-B, Carton	1	
	24813161	Sheet, Protecting	1	
	24815211	Carton Box	1	
	78015901	Instruction Book	1	
	78041021	Warranty Card	1	
	78067941	Label, Schematic Diagram	1	

Picture Tube

	33006003	CRT 160AB22 (Y)	1	